WHAT IS CLAIMED IS:

1. In system for maintaining a plurality of assemblies including a plurality of replaceable components, a method of determining time intervals at which unscheduled demand for the components is expected to occur, comprising:

establishing a set of statistical models for a probability of unscheduled component demand as a function of time;

for each component, collecting historical unscheduled component demand data;

for each component, using the collected historical unscheduled component demand data to select among the plurality of models one model of the probability of unscheduled component demand as a function of time;

for each component, selecting a desired serviceable component availability rate, α; and

using the selected model of the probability of unscheduled component demand as a function of time for each component to calculate the time intervals at which the unscheduled component demand is expected to occur.

2. The method of claim 1, wherein using the selected model of the probability of unscheduled component demand as a function of time to calculate a time period until unscheduled component demand is expected to occur comprises calculating a time period when the probability of a next unscheduled component demand event equals $1-\alpha$.

3. The method of claim 1, wherein each statistical model comprises a Poisson distribution,

$$P\{N(t)=f\}\cong e^{-\lambda}\frac{(\lambda * t)^{f}}{f!}$$

4. The method of claim 3, wherein selecting the statistical models comprises selecting a set of equations for λ.

5. The method of claim 1, further comprising eliminating insignificant variables and variables that cause multicollinearity from each of the established models.

6. The method of claim 1, wherein each statistical model comprises a Poisson distribution,

$$P\{N(t)_{i,j,m}=f\}_{k}\cong e^{-\lambda_{i,j,k,m} * t} * \frac{(\lambda_{i,j,k,m} * t)^{f}}{f!}$$

7. A method of forecasting unscheduled demand for a plurality of different components, comprising:

establishing a set of statistical models for modeling unscheduled demand for the components;

for each component, selecting one of the statistical models for a probability of unscheduled component demand; and

for each component, determining a date at which a cumulative probability of unscheduled component demand reaches a predetermined threshold.

8. The method of claim 7, wherein each statistical model comprises an N-erlang distribution,

$$P\{S_{n,i,j,m} \leq t\}_k \cong \begin{cases} 1-\sum_{r=0}^{n-1} e^{-\lambda_{i,j,k,m}*t\frac{(\lambda_{i,j,k,m}*t)^r}{r!}} & if\, t \geq 0 \\ 0 & otherwise \end{cases}$$

9. The method of claim 8, wherein selecting the statistical models comprises selecting a set of equations for λ.

10. The method of claim 7, wherein each statistical model corresponds to a Poisson distribution,

$$P\{N(t)=f\} \cong e^{-\lambda}\frac{(\lambda * t)^t}{f!}$$

11. The method of claim 10, wherein selecting the statistical models comprises selecting a set of equations for λ.

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